MA.2.AR.1.1

Overarching Standard: MA.2.AR.1 *Solve addition problems with sums between 0 and 100 and related subtraction problems.*

Benchmark of Focus

MA.2.AR.1.1   Solve one- and two-step addition and subtraction real-world problems.

Benchmark Clarifications

Clarification 1: Instruction includes understanding the context of the problem, as well as the quantities within the problem.

Clarification 2: Problems include creating real-world situations based on an equation.

Clarification 3: Addition and subtraction are limited to sums up to 100 and related differences. Refer to Situations Involving Operations with Numbers (Appendix A).

Related Benchmark/Horizontal Alignment
- MA.2.NSO.2.3
- MA.2.AR.2.2
- MA.2.M.1.2
- MA.2.M.2.2
- MA.2.DP.1.2

Vertical Alignment

Previous Benchmarks Next Benchmarks

MA.1.AR.1.2   MA.3.AR.1.2

Terms from the K-12 Glossary
- Equation
- Expression
- Associative Property of Addition
- Commutative Property of Addition

Purpose and Instructional Strategies
The purpose of this benchmark is to provide opportunities for students to solve various real-world situation types involving addition and subtraction. In grade 1, students solved real-world addition and subtraction problems within 20. *(MTR.7.1)*
- Instruction includes exposure to all situation types involving addition and subtraction.
- Mastery of all situation types, as shown in Appendix A, is expected at by the end of this grade level.
- Instruction should lead students to focus on context and apply reasoning to determine the appropriate operation.
- Instruction includes the use of number lines, drawings, diagrams or models to represent problem context.

Common Misconceptions or Errors
- Students may have difficulty interpreting the quantities in the context of the problem or misidentifying the operation needed to solve the problem.
- Students may interpret a start or change unknown problem as a result unknown problem.
- Students may look for key words which can lead to the wrong operation and cause students to ignore context and reasoning.

Strategies to Support Tiered Instruction
- Teacher provides a graphic organizer to record information about the problem that focuses on the quantities in context and the operation(s) needed to solve the problem.
    - For example, use the following problem to complete the organizer below.
        - John collected 23 leaves on his walk on Monday. On Tuesday, he collected 35 leaves on his walk. At the end of his walk on Wednesday, he had collected a total of 97 leaves. How many leaves did he collect on Wednesday?
        - What is this problem about? John collected leaves on Monday, Tuesday, and Wednesday.
        - What do I know? John collected 23 leaves on Monday and 35 leaves on Tuesday. He has a total of 97 leaves.
        - What is the problem asking? How many leaves did John collect Wednesday?
        - Does this problem have one or two steps? This problem has 2 steps.
        - What operation can I use to solve this problem? I can add and subtract.
        - How can I model this problem to solve it? Students may use an equation, a drawing, or manipulatives to model their work.

Problem:	
What is this problem about?	What do I know?
What is the problem asking?	Does this problem have one or two steps?
What operation can I use to solve this problem?	
How can I model this problem to solve it?	

- Teacher provides the chart/organizer below and guides students through determining if the start, change and result are known for each problem.
    - Example:

Problem Types	Start	Change	Result
The bakery sold 37 cookies on Thursday and 41 cookies on Friday. By the time they closed on Saturday, they had sold 94 cookies. How many cookies did they sell on Saturday?	Yes	No	Yes
Ivan has some trading cards. His mother gives him 23 trading cards and his sister gives him 49 trading cards. Now he has 87 trading cards. How many trading cards did he have before his mother and sister gave him cards?	No	Yes	Yes
Devin read 68 pages of his book during the first week of school. In the second week, he read 81 pages and in the third week he read 41 pages. How many pages has Devin read?	Yes	Yes	No

- Instruction provides opportunities to determine the context of numberless word problems with a focus on what is happening in the problem and how to solve it.
    - For example, the teacher provides the following word problem to students. Cindy Lou needs ____ cupcakes for the bake sale. She has already made ___ cupcakes. How many cupcakes does she still need to make? Teacher asks: What is this problem about? What is happening in this problem? What information do we know? How do you think you would solve this problem?

Problem:	
What is this problem about?	What do I know?
What is the problem asking?	Does this problem have one or two steps?
What operation can I use to solve this problem?	
How can I model this problem to solve it?	

Questions to ask students:
- **Which operation did you choose to solve the problem? Why?**
    - Sample answer that indicates understanding: "I chose addition to solve because there were some blue markers in the bin and some red markers in the bin. When I put them together, or add, then I can find the total markers in the bin."
- **What do the numbers in your equation represent in the problem?**
    - Sample answer that indicates understanding: Ex. 53-31=? "The 53 represents the number of stickers on the front cover. The 31 represents the 31 less stickers that are on the back

cover. The question mark, what I have to find out, is the number of stickers on the back cover."

- **Does your answer make sense? How do you know?**
  - Sample answer that indicates understanding: "I know that my answer makes sense because I labeled the numbers in my equation and it matches my base ten blocks. I also used a number line to solve it another way and I got the same answer."
- **What does the equal sign in your equation mean?**
  - Sample answer that indicates understanding: "The equal sign means 'is the same as'."

Instructional Tasks

A bus leaves Park Elementary School with 27 students. Twelve students get off at stop A and eight more get off at stop B. How many students are on the bus at stop C?

[Teacher note: Discussion of student responses should allow the opportunity to make connections between varying strategies and discuss the efficiency of a chosen strategy.]

Instructional Items

Instructional Item 1

Mr. Gene sharpened 17 more pencils than Ms. Smith. Mr. Gene sharpened 32 pencils. How many pencils did Ms. Smith sharpen?

Instructional Item 2

Create a word problem that can be solved using the equation $76 = 11 + 65$.

Additional Resources:

Blog Post: Numberless Word Problems

LearnZillion Lesson: Understand a Word Problem

LearnZillion: Solving Two-Step Word Problems Using a Model

Blog Post: Assessing Mathematical Fluency

http://smathsmarts.com/assessing-mathematical-fluency/

Video: Adding and subtracting using doubles facts
https://learnzillion.com/lesson_plans/5038-adding-and-subtracting-using-doubles-facts

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Resources/Tasks to Support Your Child at Home:

- Encourage your child to directly model one and two-step word problems, recording their work using quick pictures, bar models and/or open number lines.
- Kahn Academy Video: [Adding and Subtracting on Number Line (Word Problems)](#)
- Task: Riley has 18 snails in a bucket. He finds more. Now he has 43 snails. How many more snails did Riley find? What equation could you use to solve this problem?
- LearnZillion Lesson: [Understand a Word Problem](#)
- Task: There were 38 people on a bus. 14 people get off at the first bus stop. Then 22 new people get on the bus at the second stop. How many people are on the bus now?
- Digital games to practice **addition** fluency [Addition Game - Penguin Party](#)
- Digital games to practice **subtraction** fluency [Subtraction Game - Catch the Stars](#)
- Greg Tang Math: Math Limbo – game to practice facts http://gregtangmath.com/mathlimbo